

## **VENTILATED SHOE WITH HEEL**

### **Field of the Invention**

5        The present invention relates to a shoe with hygienic device, more particularly to a shoe with heel, which has ventilation device at its sole.

### **Description of the Prior Art**

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      A Chinese Patent No.ZL00242027.9 disclosed a kind of ventilated shoe, it has a ventilated device operated by walking. The air chamber of the ventilated device is set on the heel of the shoe, on its sole there are some vent-slots, an air intake check valve is set between 15 the air chamber and the gathering-slot where the vent-slots join with each other. Meanwhile, the air chamber is joined with the air exhaust check valve, and the air exhaust check valve is opened to atmosphere. This kind of ventilation device is more suitable for the shoe with slope heel, but it is difficult for the shoe with heel as there is 20 an obvious 90° step between the heel and the sole piece. The step causes that the distance between the intake end of the air intake check valve and the gathering-slot where the vent-slots join with each other becomes very short. Under the limit of the thickness of the sole piece, the sole piece is easy to be broken at that place if the air-gathering 25 pipeline is too long. Therefore, the air must pass longer vent-slots and then be gathered in the air-gathering pipeline. It directly influences the inhaling ability of the ventilated device, the inhaling is not concentrative, and the inhaling power is weak, the effect of

ventilating is reduced. Furthermore, under the interference of the air exhaust check valve, the advantage brought from the concave space on the heel can't be used, to enlarge the air chamber for improving the ventilation quantity is restricted. Moreover, the air chamber 5 connects the air exhaust check valve by direct insert, this kind of connection is easy to loosen, causes the reduce of ventilating.

#### **Summary of the invention**

10 It is an object of the present invention to provide a kind of ventilated shoe with heel, which is capable to increase the quantity of the ventilation and to improve the quality of the ventilation.

To achieve this object, the present invention adapts the following 15 technical solution: a kind of ventilated shoe with heel, includes several vent-slots on the sole piece, an air intake check valve, an air exhaust check valve and an air chamber set in the concave space on the heel, characterized in that the vent-slots on the sole piece gather together near the center of toes transverse line on the sole 20 piece, and a convex air-gathering pipeline is disposed between the gather point and the air intake check valve. Due to the length of the air-gather pipeline is increased, and the entrance of the air-gather pipeline directly extends to the center of toes transverse line, then, the collected air from the shoe chamber passing through 25 the vent-slots can be congregated in a relatively short distance; therefore, the air chamber's inhaling force is centralized and increased, and thus the ventilation quantity and quality both are improved.

**Brief description of the drawings**

FIG. 1 is a partially schematic view of an embodiment of the  
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FIG. 2 is the right side view of FIG. 1.

FIG. 3 is the rear view of FIG. 1.

**Detailed description of the preferred embodiment**

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To enable a further understanding of the innovative and technological content of the invention herein, refer to the detailed description of the invention and the accompanying drawings below:

15 The main components of the ventilated shoe with heel of this embodiment are similar to a regular shoe with heel. In this embodiment, several vent-slots set on the inner-sole (middle-sole and inner-cushion) are generally the same as the disclosure of the Chinese Patent No. ZL00242027.9, and the main differences are on the structure  
20 of the sole piece (13).

As shown in FIG 1, the sole piece includes several vent-slots (1), an air intake check valve (12) and an air exhaust check valve (3). The vent-slots (1) on the sole piece gather together near the center  
25 of toes transverse line on the sole piece. A convex air-gather pipeline (2) is disposed between the gather point and the air intake check valve (as shown in FIG 3). As shown in FIG 2, the outer surface (14) of the convex air-gather pipeline (2) is connected smoothly with

the sole piece through approach ramp, in order to ensure the balance of the interface between the sole piece and the ground and not to infect the use of the shoe. A latex pipe (11) is sleeved on the outside of the pipe connection between the air intake check valve (12) and 5 the air chamber in order to prevent air leaking. The convex-shaped air chamber (9) is set in the concave space on the heel, and the annular surface (10) of the air chamber (9) and the annular surface (15) of the heel are on a same plane. Thus, the height of the raised surface of the air chamber compare with the plane is ensured. For the 10 ventilated shoe with short heel it still ensures the height of the air chamber, and still keeps the compression capability of the air chamber; for the ventilated shoe with high heel the quantity and quality of the ventilation are improved. Furthermore, the alignment of the annular surface of the air chamber and the annular surface 15 of the heel forms a platform to stick with the middle piece, based with having enough supporting area between the sole and middle piece, the concave space of the heel gives a maximal possible space for the air chamber, therefore, the volume of the air chamber is increased much.

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As shown in FIG 1, the exhaust port (7) and intake port (8) parallel with each other, and a convex L-shaped installation groove (4) is set on the sole piece between the exhaust port (7) and the outside of sole piece (as shown in FIG 3). The exhaust port is connected to 25 the exhaust valve (3) through a soft pipe (5) mounted on the L-shaped installation groove, and the exhaust valve (3) is opened to the atmosphere. Because the exhaust valve is apart from the heel, the concave space of the heel can gain a maximal space for the air chamber.

The connection between the exhaust port (7) and the exhaust valve (3) is a soft pipe (5) which wraps both of them, and as the interface is soft connection, there is no air leak or connection loosening after long time usage, therefore, the effect of the ventilation is good.

5 In addition, there is a moveable soft underlay (6) inside the soft pipe (5) to support the soft pipe (5) through when it is bended.

In summarize, the present invention has the following advantages compared with the prior arts:

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1. It increases the quantity and improves quality of the ventilation of the ventilated shoe with heel.
2. There is no air leak problem after long time using, it ensures the better effect of the ventilation.
- 15 3. It increases the lifetime of the ventilated shoe with heel.
4. It realizes the ability of ventilation for the shoe with heel.

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